

ROADS 2015

Enfield Town Council
May 28, 2014



DEPARTMENT OF PUBLIC WORKS

DPW PRESENTATION TEAM

TOWN OF ENFIELD

JONATHAN S. BILMES, P.E. – Director of Public Works

BILLY G. TAYLOR, P.E. – Deputy Director of Public Works

JOHN CABIBBO, P.E. – Assistant Town Engineer

DONALD T. NUNES - ROADS Engineer

RACHEL BLATT – Assistant Town Planner

VANASSE HANGEN BRUSTLIN, INC.

GORDON DARING, P.E. – CT Managing Director



DEPARTMENT OF PUBLIC WORKS

AGENDA

- Background
 - Pavement Management
 - Review of 2013 Council Recommendations
- Moving Forward
- DPW Recommendations
- Finance Director
- Town Manager



PAVEMENT MANAGEMENT

PCI: PAVEMENT CONDITION INDEX

A NUMERICAL INDEX BETWEEN 0 (IMPASSABLE) AND 100 (NEWLY PAVED) THAT IS USED TO INDICATE THE GENERAL CONDITION OF A PAVEMENT.

PCI 93-100: EXCELLENT CONDITION, NO IMMEDIATE
MAINTENANCE REQUIRED



DEPARTMENT OF PUBLIC WORKS

PAVEMENT MANAGEMENT

PCI: 33 – BASE REHABILITATION



ROCKET RUN - 2014



DEPARTMENT OF PUBLIC WORKS

PAVEMENT MANAGEMENT

PCI: 65 – STRUCTURAL IMPROVEMENT



PILGRIM CIRCLE - 2014



DEPARTMENT OF PUBLIC WORKS

PAVEMENT MANAGEMENT

PCI: 88 – ROUTINE MAINTENANCE



PINEWOOD LANE - 2014



DEPARTMENT OF PUBLIC WORKS

PAVEMENT MANAGEMENT

PCI: 100 – NO MAINTENANCE

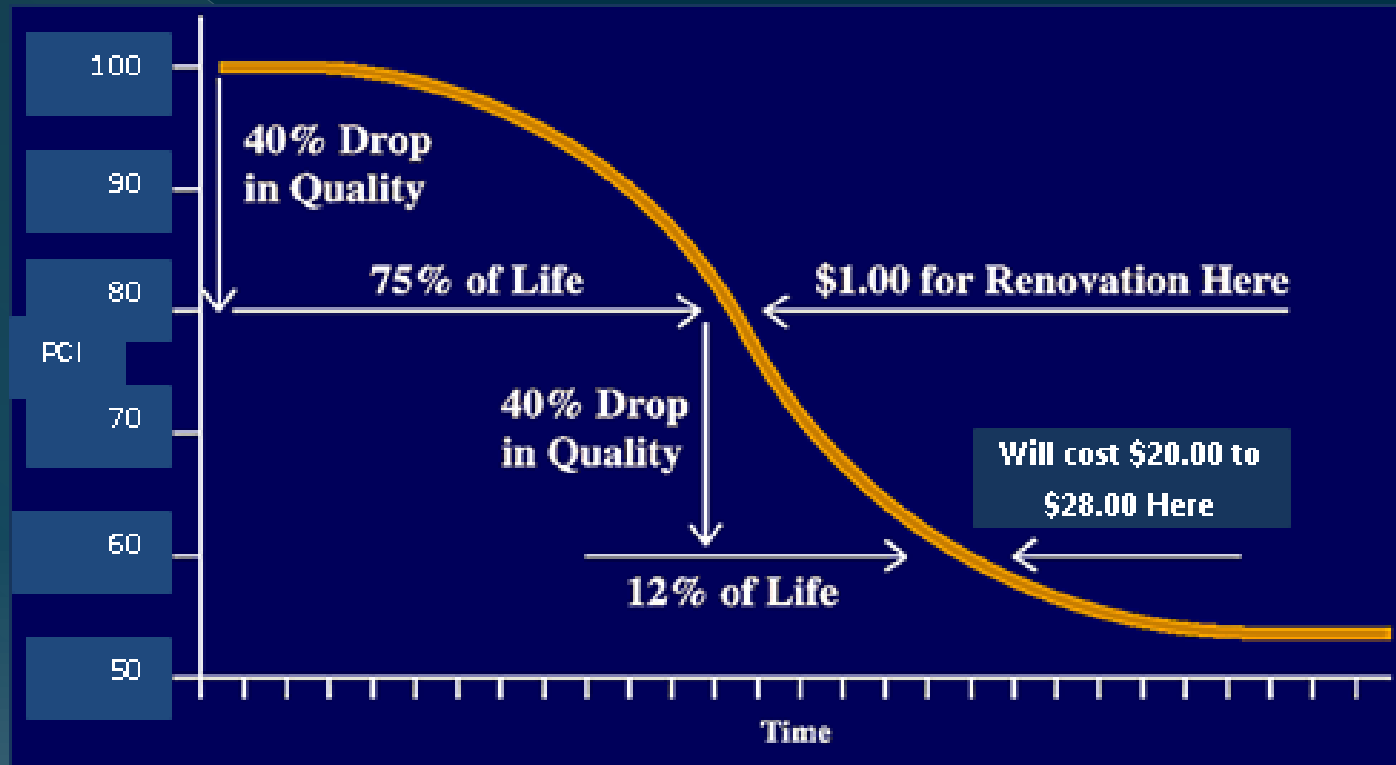


BURNHAM STREET - 2014



DEPARTMENT OF PUBLIC WORKS

PAVEMENT MANAGEMENT



TYPICAL PAVEMENT DETERIORATION CURVE



PAVEMENT MANAGEMENT

PAVEMENT MANAGEMENT APPROACH

- THE RIGHT TREATMENT ON THE RIGHT ROAD AT THE RIGHT TIME.
- EXTEND THE LIVES OF ROADS THAT ARE IN GOOD OR FAIR CONDITION.
- “WORST-FIRST” NOT A GOOD STRATEGY.
- GET THE “BIGGEST BANG FOR THE BUCK.”



2013 COUNCIL RECOMMENDATIONS

ROADS 2000, 2005 AND 2010 REVIEW

ROADS 2000 - \$21.6M – 24.1 MILES RECONSTRUCTION
13.5 MILES PRESERVATION

ROADS 2005 - \$24.0M – 13.9 MILES RECONSTRUCTION
1.0 MILE PRESERVATION

ROADS 2010 - \$27.5M – 12.2 MILES RECONSTRUCTION
28.6 MILES PRESERVATION (48 STREETS)

TOTAL PROGRAM - \$73.1M – 50.2 MILES RECONSTRUCTION
43.1 MILES PRESERVATION



DEPARTMENT OF PUBLIC WORKS



Legend

— Town Boundary Line

ROAD 2000

— Completed

ROAD 2005

— Completed

ROAD 2010 Reconstruct

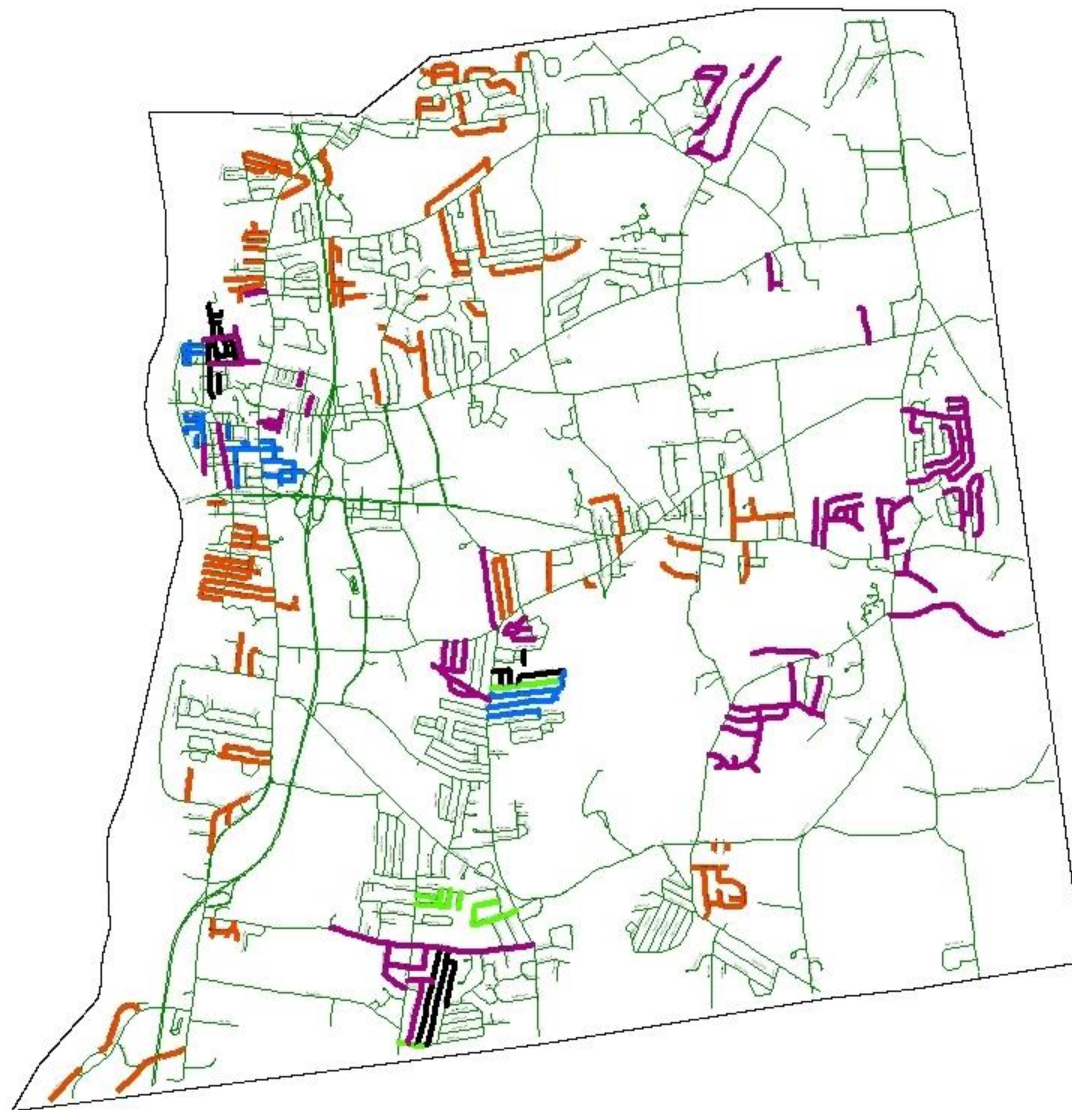
ROAD 2010

— Completed

— Scheduled

— Under Design

— Enfield Roads



Legend

- Enfield Roads
- Town Boundary Line

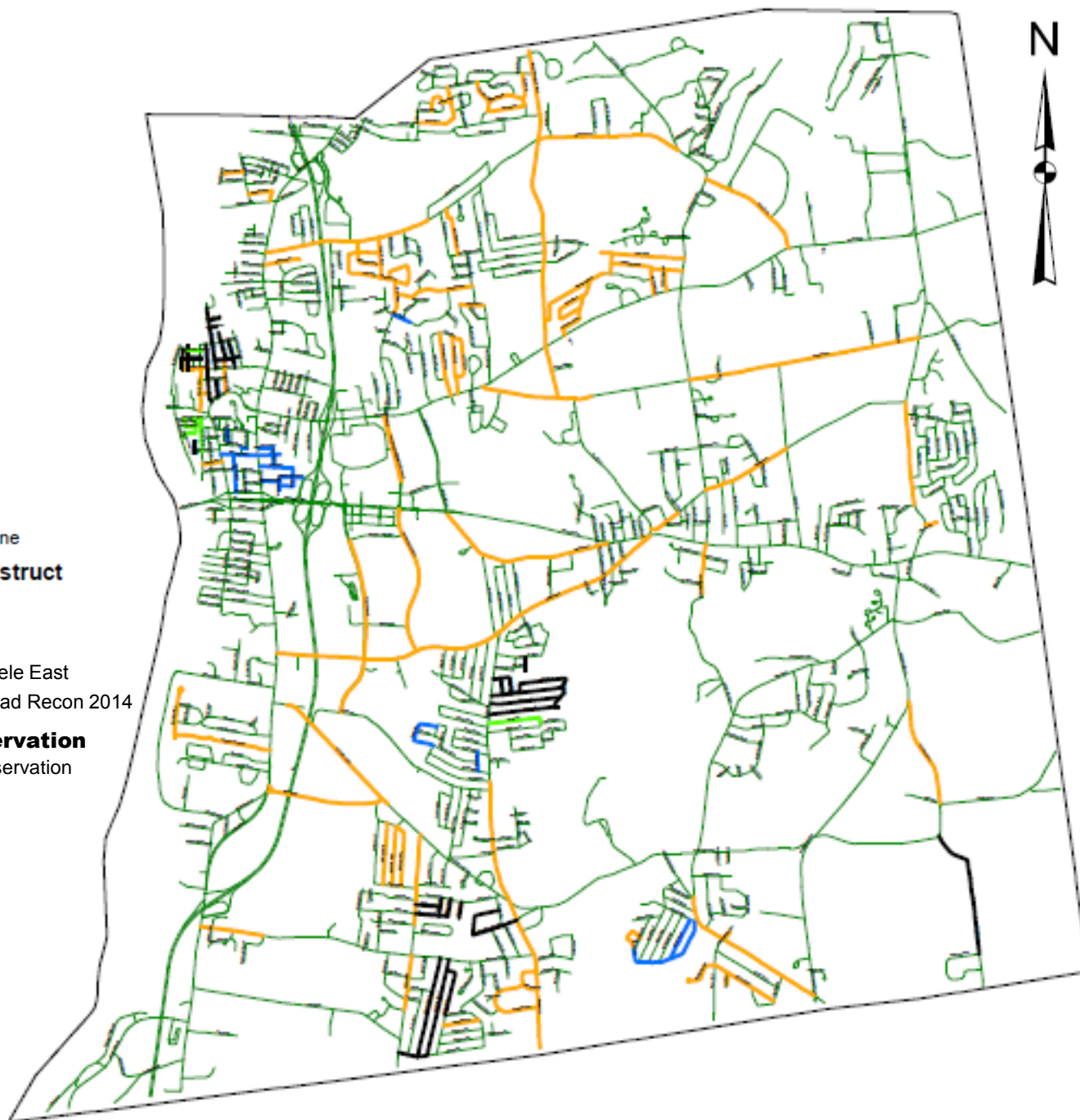
ROAD 2010 Reconstruct

ROAD 2010

- Completed
- T'ville West, Steele East
- T'ville South, Road Recon 2014

ROAD 2010 Preservation

- 2014 Pvmt. Preservation Program



2013 COUNCIL RECOMMENDATIONS

2014 CONSTRUCTION PROJECTS

- RAFFIA EAST
- THOMPSONVILLE WEST
- THOMPSONVILLE SOUTH
- 2014 PAVEMENT PRESERVATION PROGRAM (48 STREETS)
- ROAD RECONSTRUCTION 2014
- MULLEN ROAD CULVERT CROSSING IMPROVEMENTS

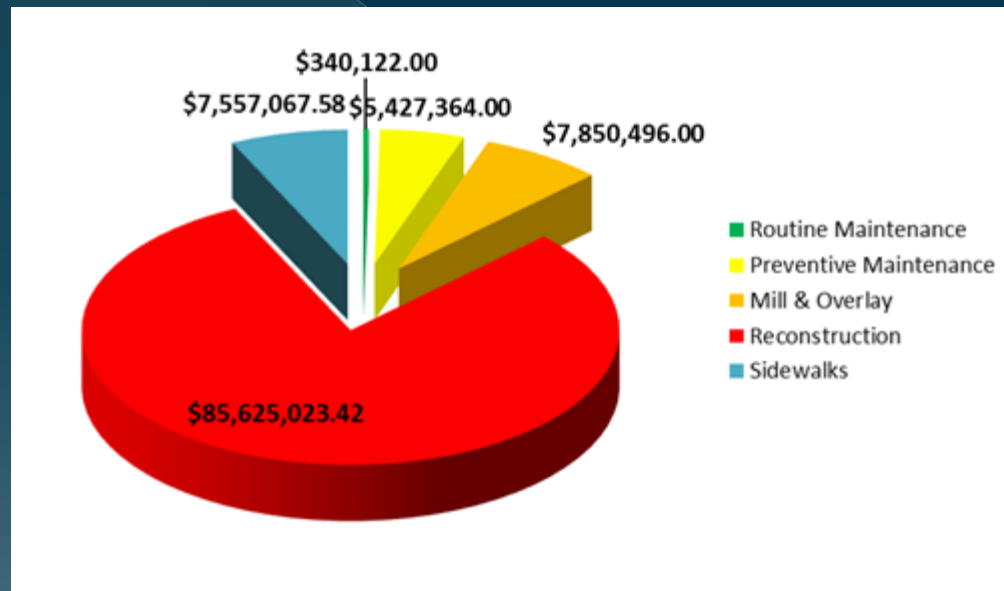


DEPARTMENT OF PUBLIC WORKS

END OF 2014

BACKLOG OF PAVEMENT NEEDS

TO OBTAIN A PCI: 93-100 (ALL STREETS)



ESTIMATED COST: \$106,800,073



DEPARTMENT OF PUBLIC WORKS

END OF 2014

BACKLOG OF PREVIOUSLY COMMITTED

ROADS 2000, 2005, 2010 PROJECTS

104 STREETS

ESTIMATED COST OF RECONSTRUCTION: \$55,000,000



DEPARTMENT OF PUBLIC WORKS

MOVING FORWARD

COMPLETE STREETS PRESENTATION

RACHEL BLATT – ASSISTANT TOWN PLANNER



DEPARTMENT OF PUBLIC WORKS

COMPLETE STREETS

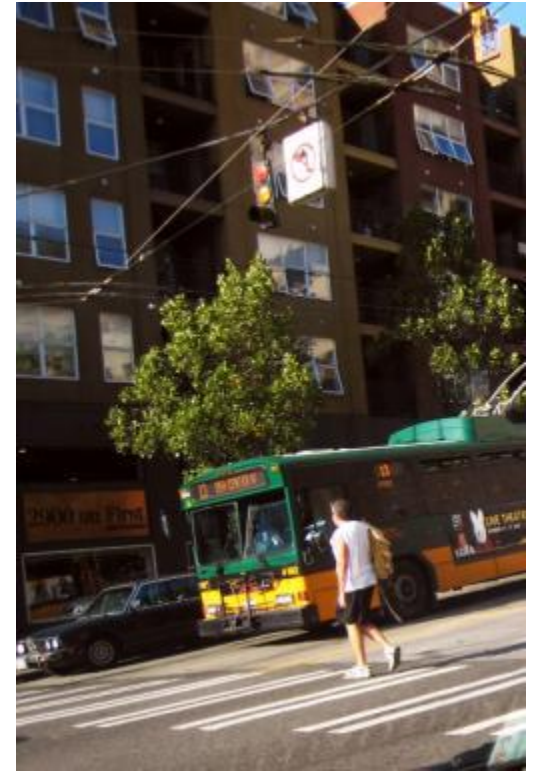
May 28, 2014 TOWN COUNCIL WORKSHOP

What are Complete Streets?



Complete Streets are streets for everyone, no matter who they are or how they travel.

What are Complete Streets?



- SAFE
- COMFORTABLE
- CONVENIENT

Complete Streets are streets for everyone, no matter who they are or how they travel.

What are Complete Streets?



- SAFE
- COMFORTABLE
- CONVENIENT

Complete Streets are streets for everyone, no matter who they are or how they travel.

WHY COMPLETE STREETS?

Very Briefly

WHY COMPLETE STREETS, very briefly

➤ Provide options

- Air quality
- Eyes on the street / crime prevention

➤ Reduce traffic congestion

- Peak oil / oil dependence
- Strong local retailers and housing values
- Employee retention

➤ Traffic safety

- Lower health care costs
- Social equity

➤ Inactivity / Obesity epidemic

- Quality of life

Americans want choices

66%

of Americans want more transportation options so they have the freedom to choose how to get where they need to go.

73%

currently feel they have no choice but to drive as much as they do.

57%

would like to spend less time in the car.

WHY COMPLETE STREETS,

very briefly

➤ Provide options

- Air quality
- Eyes on the street / crime prevention

➤ Reduce traffic congestion

- Peak oil / oil dependence
- Strong local retailers and housing values
- Employee retention

➤ Traffic safety

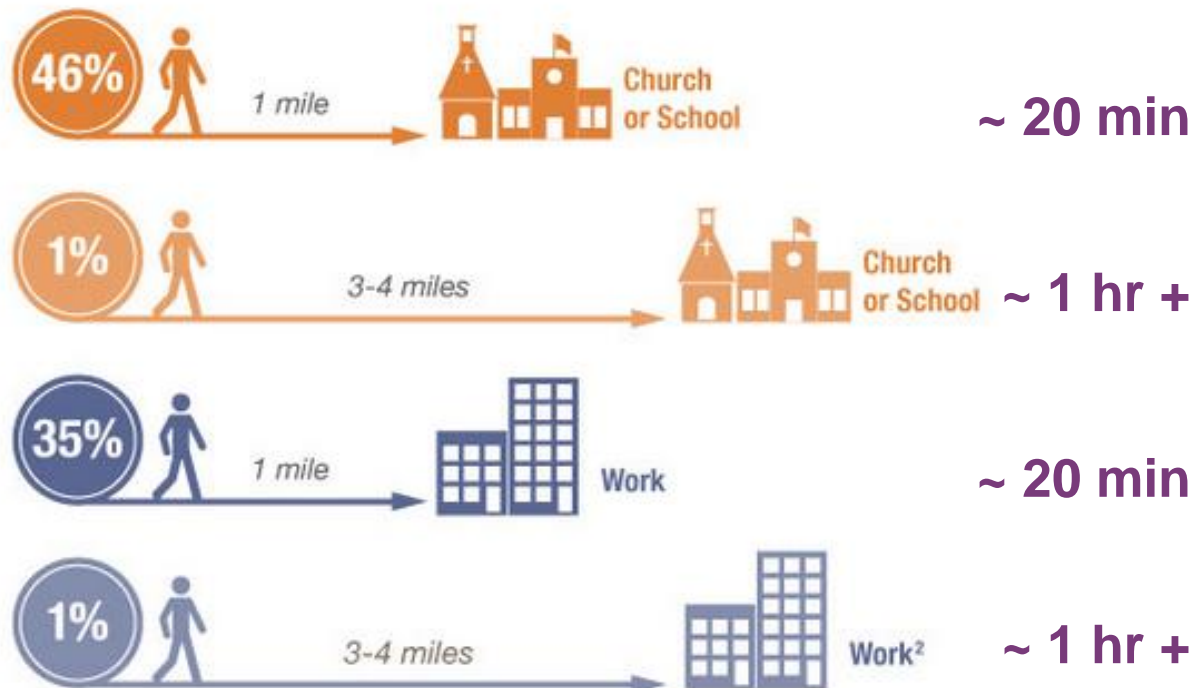
- Lower health care costs
- Social equity

➤ Inactivity / Obesity epidemic

- Quality of life

Americans want choices

STUDIES SHOW PEOPLE WILL WALK TO DESTINATIONS:



WHY COMPLETE STREETS, very briefly

➤ Provide options

- Air quality
- Eyes on the street / crime prevention

➤ Reduce traffic congestion

- Peak oil / oil dependence
- Strong local retailers and housing values
- Employee retention

➤ Traffic safety

- Lower health care costs
- Social equity

➤ Inactivity / Obesity epidemic

- Quality of life

The tremendous potential for traffic reduction

Of all trips:

39% **17%** **47%**

are less than 3 miles

are less than 1 mile

are driven



of these trips...



~ 1 hr walk

~ 20 min walk

National Household Travel Survey (2009)

WHY COMPLETE STREETS, very briefly

- **Provide options**
 - Air quality
 - Eyes on the street / crime prevention
- **Reduce traffic congestion**
 - Peak oil / oil dependence
 - Strong local retailers and housing values
 - Employee retention
- **Traffic safety**
 - Lower health care costs
 - Social equity
- **Inactivity / Obesity epidemic**
 - Quality of life

The tremendous potential for traffic reduction



Traffic Congestion cost the U.S. economy \$87.2 billion in hours lost to traffic jams and wasted fuel in 2007 alone.

WHY COMPLETE STREETS, very briefly

➤ Provide options

- Air quality
- Eyes on the street / crime prevention

➤ Reduce traffic congestion

- Peak oil / oil dependence
- Strong local retailers and housing values
- Employee retention

➤ Traffic safety

- Lower health care costs
- Social equity

➤ Inactivity / Obesity epidemic

- Quality of life

Complete streets are safer streets

Each Year in the United States,
there are approximately:

4,000

Pedestrian Deaths / Year

40,000

Motor Vehicle Deaths / Year

400,000

Sedentary-related Deaths / Year

ENFIELD:

50 total traffic
fatalities since
1996 (6.25/year)

234 pedestrian-
vehicle accidents
since 1996
(29.25/year)

WHY COMPLETE STREETS, very briefly

- **Provide options**
 - Air quality
 - Eyes on the street / crime prevention
- **Reduce traffic congestion**
 - Peak oil / oil dependence
 - Strong local retailers and housing values
 - Employee retention
- **Traffic safety**
 - Lower health care costs
 - Social equity
- **Inactivity / Obesity epidemic**
 - Quality of life

Complete streets are safer streets



More than 40% of pedestrian deaths in 2007 and 2008 occurred where no crosswalk was available.

National Highway Traffic Safety Administration's Fatality Reporting System

WHY COMPLETE STREETS, very briefly

- **Provide options**
 - Air quality
 - Eyes on the street / crime prevention
- **Reduce traffic congestion**
 - Peak oil / oil dependence
 - Strong local retailers and housing values
 - Employee retention
- **Traffic safety**
 - Lower health care costs
 - Social equity
- **Inactivity / Obesity epidemic**
 - Quality of life

Complete streets are safer streets



WHY COMPLETE STREETS, very briefly

- **Provide options**
 - Air quality
 - Eyes on the street / crime prevention
- **Reduce traffic congestion**
 - Peak oil / oil dependence
 - Strong local retailers and housing values
 - Employee retention
- **Traffic safety**
 - Lower health care costs
 - Social equity
- **Inactivity / Obesity epidemic**
 - Quality of life

Complete streets are safer streets

10-15 MPH

Driver's peripheral vision
Stopping distance
Crash risk



20-25 MPH

Driver's peripheral vision
Stopping distance
Crash risk



30-35 MPH

Driver's peripheral vision
Stopping distance
Crash risk



40+ MPH

Driver's peripheral vision
Stopping distance
Crash risk



As a driver's speed increases, his peripheral vision narrows severely.²

WHY COMPLETE STREETS,

very briefly

➤ Provide options

- Air quality
- Eyes on the street / crime prevention

➤ Reduce traffic congestion

- Peak oil / oil dependence
- Strong local retailers and housing values
- Employee retention

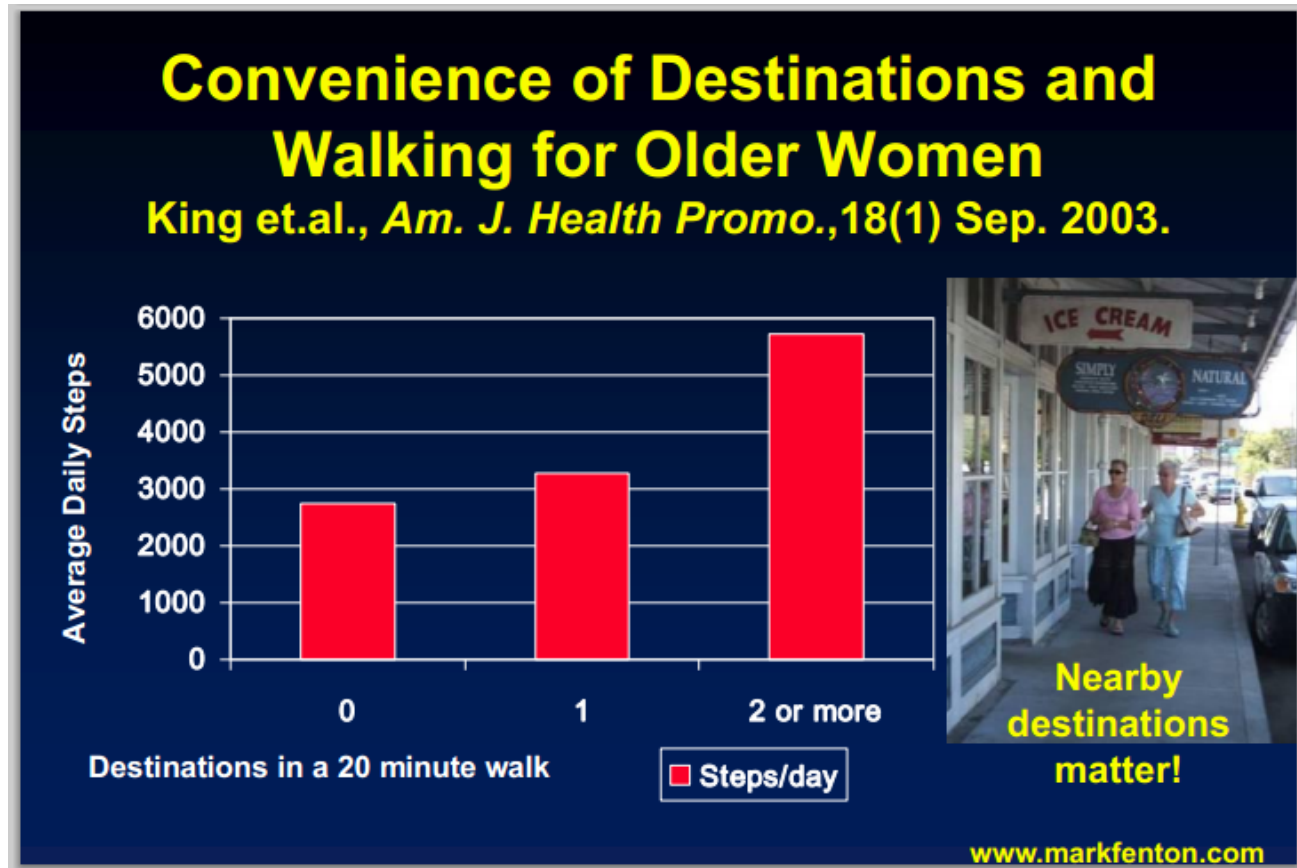
➤ Traffic safety

- Lower health care costs
- Social equity

➤ Inactivity / Obesity epidemic

- Quality of life

Make getting daily physical activity easy and convenient



WHY COMPLETE STREETS,

very briefly

➤ Provide options

- Air quality
- Eyes on the street / crime prevention

➤ Reduce traffic congestion

- Peak oil / oil dependence
- Strong local retailers and housing values
- Employee retention

➤ Traffic safety

- Lower health care costs
- Social equity

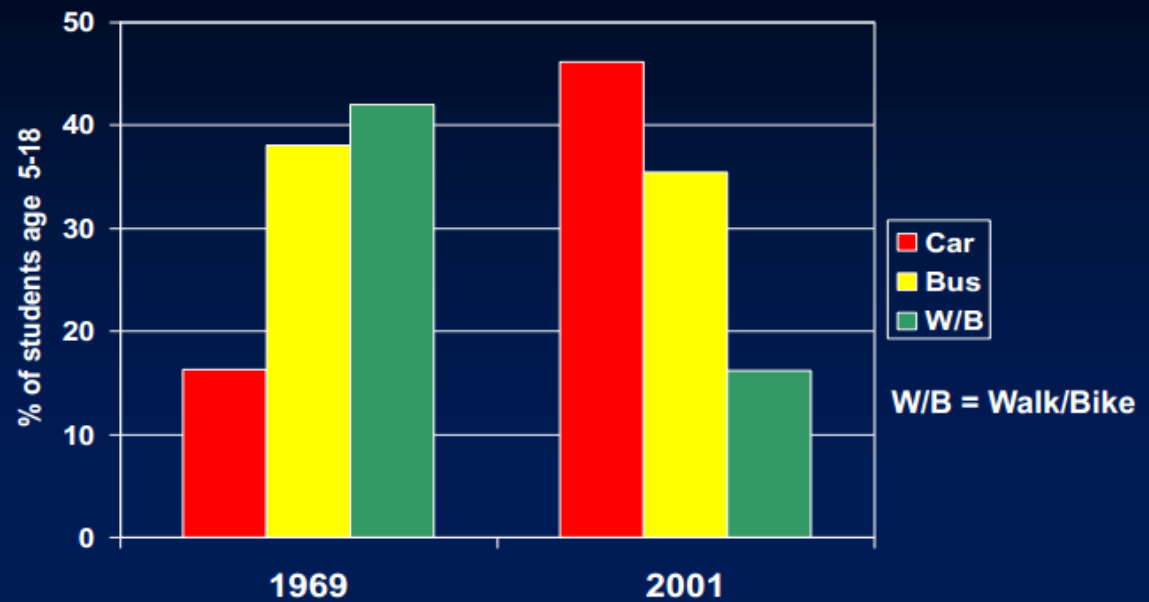
➤ Inactivity / Obesity epidemic

- Quality of life

Make getting daily physical activity easy and convenient

Changes in Walking & Cycling to School, 1969 to 2001

Ham et.al., *Jour. of Physical Activity & Health*, 2008, 5, 205-215



www.markfenton.com

SAMPLE COMPLETE STREETS PROJECTS

What are Complete Streets?



Complete Streets are streets for everyone, no matter who they are or how they travel.

What are Complete Streets Projects?



Projects that expand upon the current travel options and make walking, biking, driving, and riding transit safer, more comfortable, and more convenient for all.

Complete Streets are streets for everyone, no matter who they are or how they travel.

Recent Successes in Enfield

Magic Carpet Bus Service



Post Office / Town Farm Rd Multi Use Trail



Pedestrian Count-down Signals



URBAN / SUBURBAN

Transit Stop / Sidewalk Connections



SUBURBAN

Roundabouts



SUBURBAN / RURAL

On-street Parking



URBAN

Wide Sidewalks



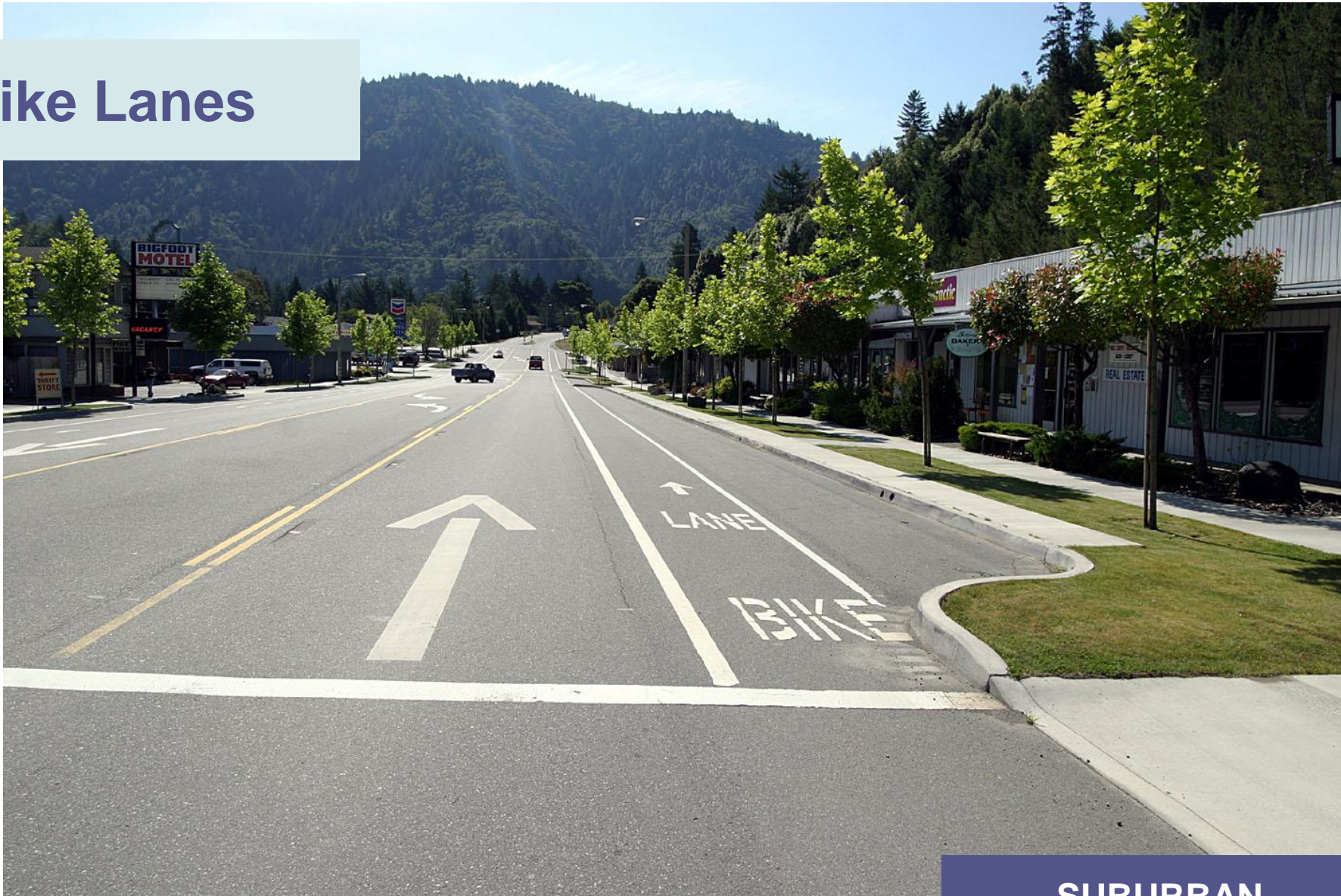
URBAN / SUBURBAN

Street furniture



URBAN / SUBURBAN

Bike Lanes



SUBURBAN

Lane re-alignments

Road Diets
Road diets, being seen more often.



Urbana, IL; before & after.



- Can reduce collisions & severity.
- Dramatically improves performance for pedestrians & cyclists.

SUBURBAN / RURAL

Paved Shoulder



RURAL

Shared Streets



SUBURBAN / RURAL

PROCESS

The apparent phases of CS implementation:

- i.** Passage of a council resolution or executive order. (*Whereas . . . Be it resolved . . .*)
- ii.** Adoption of DPW/engineering *policy*.
- iii.** Adoption of detailed roadway design standards or *guidelines*.
- iv.** Engineering practice (staff, consultants) includes routine consideration of pedestrians, bicycles, & transit in absolutely every project (including routine maintenance).

National Complete Streets Coalition finds that a successful policy:

1. Sets a vision
2. Includes all users and all modes
3. Applies to all phases of all applicable projects
4. Specifies and limits exceptions, with management approval required
5. Emphasizes connectivity
6. Is understood by all agencies to cover all roads
7. Uses the best and latest design standards and is flexible
8. Complements the community's context
9. Sets performance standards
10. Includes implementation steps

STEPS TO IMPLEMENTATION

STEP #1

- A Council Resolution
- State DOT has created a model resolution

STEP #2

- Create a Committee
- “Stealth Committee” and Public Process

STEP #3

- Adopt Design Guidelines/Policy

STEP #4

- Adopt a Pedestrian/Bicycle Master Plan

Connection to ROADS Program

- Complete Streets concepts are already being utilized:
 - South Rd – Reduction to 11 ft travel lanes (with potential for bike lanes in shoulders)
 - Route 5 Bridge Reconstruction – 4 lanes to 3 lanes
 - Route 5 Resurfacing – State has accepted a reduction to 11 ft travel lanes (with potential for bike lanes in shoulders)
- Adopting a Complete Streets policy means making Complete Streets concepts a part of the discussion for every ROADS project during the design phase.
 - It does not mean an automatic cost increase
 - However, Complete Streets could add to project costs, depending on which treatments are appropriate

Connection to ROADS Program

Pedestrian and Bicycle Infrastructure Costs in the US: A Sample of Cost Information

Infrastructure Facility	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Bicycle Locker	\$2,140	\$2,090	\$1,280	\$2,680	Each	4 (5)
Bicycle Lane	\$89,470	\$133,170	\$5,360	\$536,680	Mile	6 (6)
Bicycle Rack	\$540	\$660	\$64	\$3,610	Each	19 (21)
Concrete Sidewalk	\$27	\$32	\$2.09	\$410	Linear Foot	46 (164)
Curb and Gutter	\$20	\$21	\$1.05	\$120	Linear Foot	16 (108)
Curb Extension/ Choker/ Bulb-Out	\$10,150	\$13,000	\$1,070	\$41,170	Each	19(28)
Flashing Beacon	\$5,170	\$10,010	\$360	\$59,100	Each	16 (25)
High Visibility Crosswalk	\$3,070	\$2,540	\$600	\$5,710	Each	4(4)
Multi-Use Trail - Paved	\$261,000	\$481,140	\$64,710	\$4,288,520	Mile	11 (42)
Multi-Use Trail - Unpaved	\$83,870	\$121,390	\$29,520	\$412,720	Mile	3 (7)
Pedestrian Crossing	\$310	\$360	\$240	\$1,240	Each	4 (6)
Pedestrian Hybrid Beacon	\$51,460	\$57,680	\$21,440	\$128,660	Each	9 (9)
Pedestrian Rail	\$95	\$100	\$7.20	\$690	Linear Foot	29 (83)
Pedestrian Signal	\$980	\$1,480	\$130	\$10,000	Each	22 (33)
Raised Crosswalk	\$7,110	\$8,170	\$1,290	\$30,880	Each	14 (14)
Rapid Rectangular Flashing Beacon	\$14,160	\$22,250	\$4,520	\$52,310	Each	3 (4)
Shared Lane/Bicycle Marking	\$160	\$180	\$22	\$600	Each	15 (39)
Signed Bicycle Route	\$27,240	\$25,070	\$5,360	\$64,330	Mile	3 (6)
Speed Bump	\$1,670	\$1,550	\$540	\$2,300	Each	4 (4)
Speed Hump	\$2,130	\$2,640	\$690	\$6,860	Each	14 (14)
Speed Table	\$2,090	\$2,400	\$2,000	\$4,180	Each	5 (5)
Speed Trailer	\$9,480	\$9,510	\$7,000	\$12,410	Each	6 (6)
Stop/Yield Signs	\$220	\$300	\$210	\$560	Each	4 (4)
Streetlight	\$3,600	\$4,880	\$310	\$13,900	Each	12 (17)
Striped Crosswalk	\$340	\$770	\$110	\$2,090	Each	8 (8)
Wheelchair Ramp	\$740	\$810	\$89	\$3,600	Each	16 (31)

- Complete

- Solar

- Road

- Road

- Adopting

- Complete

- every R

- It do

- How

- which

utilized:

al for bike

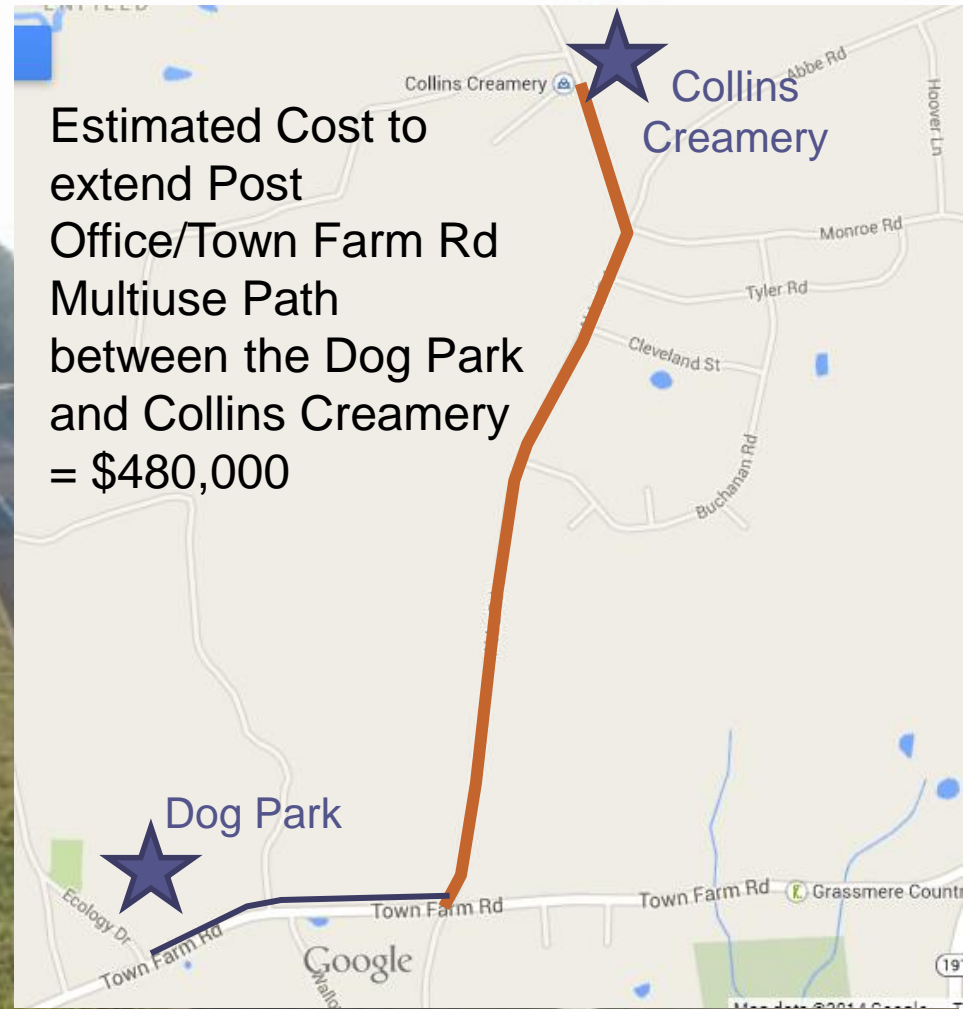
to 11 ft travel

king

sion for

depending on

Connection to ROADS Program



MOVING FORWARD

CLARIFICATIONS/ASSUMPTIONS

- \$300 PER LINEAR FOOT RECONSTRUCTION COSTS
 - DESIGN
 - INSPECTION
 - DRAINAGE
 - SIDEWALKS
 - PAVEMENT
- COMPLETE STREETS CONCEPT COULD BE AN ADDITIONAL COST

CURRENT PCI

- AVERAGE PCI 77 OF ALL ROADS AT END OF 2014

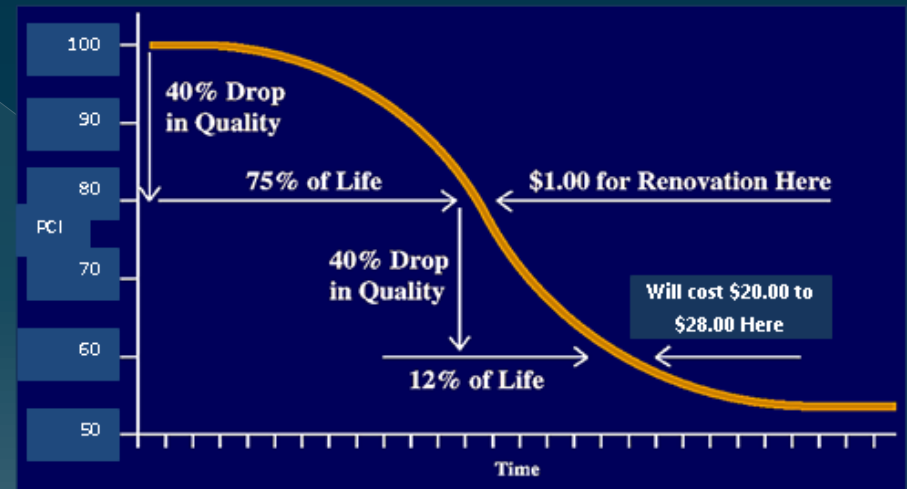


DEPARTMENT OF PUBLIC WORKS

DPW RECOMMENDATIONS

GOAL BASED APPROACH

- DEVELOP AND MAINTAIN A DIFFERENT PCI GOAL FOR ARTERIALS/COLLECTORS VERSUS LOCAL RESIDENTIAL STREETS.
- INCORPORATE 'COMPLETE STREETS' CONCEPT WHERE APPROPRIATE.
- UTILIZE A WIDE RANGE OF PAVEMENT MANAGEMENT TECHNIQUES.
- MAINTAIN THE GAINS IN PCI THAT HAVE BEEN REALIZED THROUGH THE PAST SEVERAL YEARS.



TYPICAL PAVEMENT
DETERIORATION CURVE



DPW RECOMMENDATIONS

ARTERIALS/COLLECTORS GOAL PCI: 82

- MORE PEOPLE UTILIZE THE TOWN'S ARTERIAL AND COLLECTOR STREETS THAN LOCAL RESIDENTIAL STREETS.
- INSURE THE GREATEST NUMBER OF PEOPLE BENEFIT FROM EVERY DOLLAR SPENT.
- DRIVING ON DETERIORATED ROADS COSTS \$400 PER YEAR IN EXTRA VEHICLE OPERATING COSTS TO EACH ROADWAY USER.
(SOURCE: MASSACHUSETTS INFRASTRUCTURE INVESTMENT COALITION)
- A PCI: 82 MAINTAINS THE GAINS THROUGHOUT THE PAST SEVERAL YEARS.



DPW RECOMMENDATIONS

BENEFIT VALUE (BV) = PROJECT PRIORITY

- ACTUAL OR ESTIMATED AVERAGE DAILY TRAFFIC
- ESTIMATED LIFE OF PAVEMENT
- PAVEMENT CONDITION INDEX
- ESTIMATED UNIT COST OF TREATMENT (L.F.)

THE INTENT IS TO PRIORITIZE COST EFFECTIVE PROJECTS ON HIGH USE ROADS OVER LESS COST EFFECTIVE PROJECTS ON LOWER USE ROADS, THEREBY POSITIVELY IMPACTING THE GREATEST NUMBER OF PEOPLE.



DEPARTMENT OF PUBLIC WORKS

DPW RECOMMENDATIONS

ARTERIALS/COLLECTORS GOAL PCI: 82

FUNDING SCENARIO 2015-2019

ARTERIAL/COLLECTORS	2015	2016	2017	2018	2019	
						Total
Routine Maintenance PCI: 86-92	\$11,477	\$0	\$0	\$0	\$0	\$11,477
Preventive Maintenance PCI: 73-85	\$26,971	\$36,186	\$0	\$0	\$0	\$63,157
Structural Improvement PCI: 61-72	\$1,477,491	\$1,034,081	\$448,158	\$0	\$0	\$2,959,730
Base Rehab/Reclamation PCI: 0-60	\$479,866	\$896,576	\$1,435,168	\$1,976,941	\$1,907,068	\$6,695,619
	\$1,995,805	\$1,966,843	\$1,883,326	\$1,976,941	\$1,907,068	\$9,729,983



DEPARTMENT OF PUBLIC WORKS

DPW RECOMMENDATIONS

LOCAL RESIDENTIAL GOAL PCI: 75

- LOCAL STREETS PROVIDE A HIGH LEVEL OF ACCESS TO ABUTTING LAND BUT LIMITED MOBILITY.
- LOCAL STREETS FUNCTION PRIMARILY TO SERVE LOCAL TRAFFIC CIRCULATION AND LAND ACCESS.
- LOCAL STREETS CUSTOMARILY ACCOMMODATE SHORTER TRIPS, HAVE LOWER TRAFFIC VOLUMES, AND LOWER SPEEDS THAN COLLECTORS AND ARTERIALS.
- A PCI: 75 MAINTAINS THE GAINS THROUGHOUT THE PAST SEVERAL YEARS FOR THESE ROADWAY CLASSIFICATIONS.



DPW RECOMMENDATIONS

LOCAL RESIDENTIAL GOAL PCI: 75

FUNDING SCENARIO 2015-2019

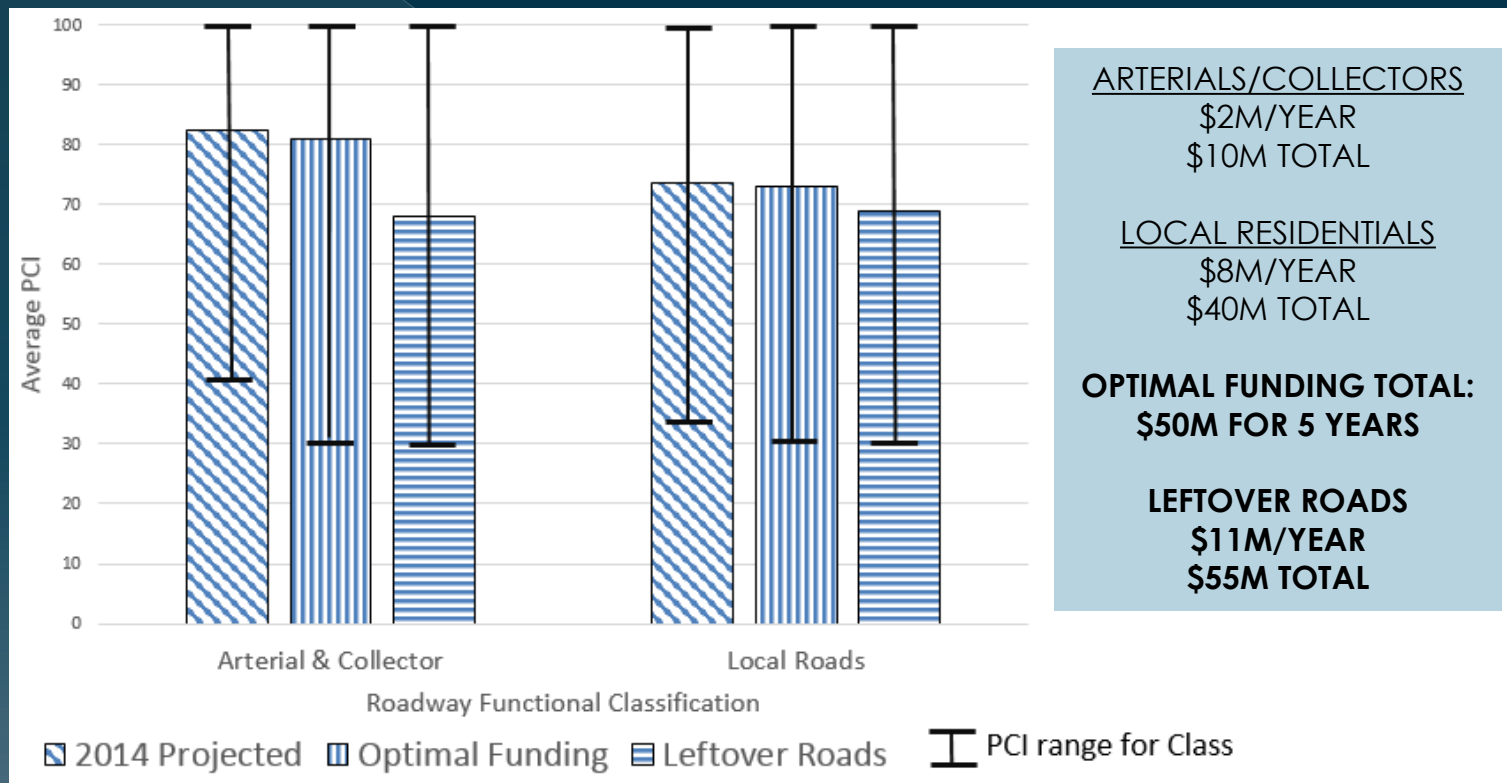
LOCAL RESIDENTIALS	2015	2016	2017	2018	2019	
						Total
Routine Maintenance PCI: 86-92	\$161,667	\$64,450	\$0	\$0	\$0	\$226,117
Preventive Maintenance PCI: 73-85	\$356,459	\$311,635	\$179,281	\$38,502	\$0	\$885,877
Structural Improvement PCI: 61-72	\$1,167,832	\$1,393,223	\$2,159,927	\$581,577	\$772,054	\$6,074,613
Base Rehab/Reclamation PCI: 0-60	\$6,312,979	\$6,228,356	\$5,660,537	\$7,376,196	\$7,224,576	\$32,802,644
	\$7,998,937	\$7,997,664	\$7,999,745	\$7,996,275	\$7,996,630	\$39,989,251



DEPARTMENT OF PUBLIC WORKS

DPW RECOMMENDATIONS

GOAL BASED APPROACH IMPACT ON PCI



DEPARTMENT OF PUBLIC WORKS

DPW RECOMMENDATIONS

GOAL BASED APPROACH SUMMARY

- \$2M/YEAR FOR COLLECTORS/ARTERIALS = \$10M TOTAL
- \$8M/YEAR FOR LOCAL RESIDENTIAL = \$40M TOTAL
- GOAL BASED APPROACH MAINTAINS THE GAINS THAT HAVE BEEN REALIZED THROUGH THE PAST SEVERAL YEARS OF IMPROVEMENTS AS WELL AS THE COMPLETED AND PLANNED IMPROVEMENTS DURING 2014.
- INSURES THAT THE GREATEST NUMBER OF PEOPLE POSSIBLE BENEFIT FROM EVERY DOLLAR SPENT ON TOWN ROADS.
- PLEASE REFER TO THE OPTIMAL STREET LIST SCENARIO HANDOUT .



NEXT STEPS

- Finance Director
- Town Manager

